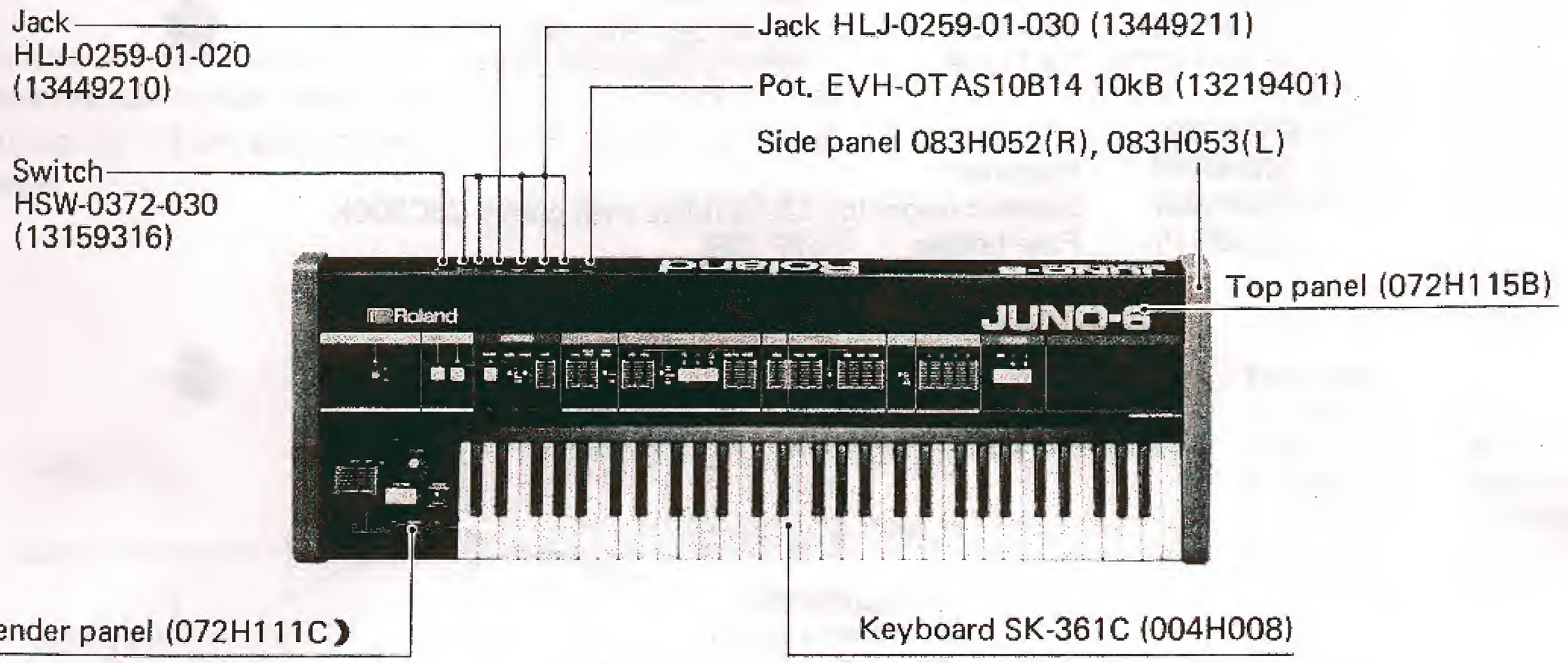
JU-6 SERVICE NOTES

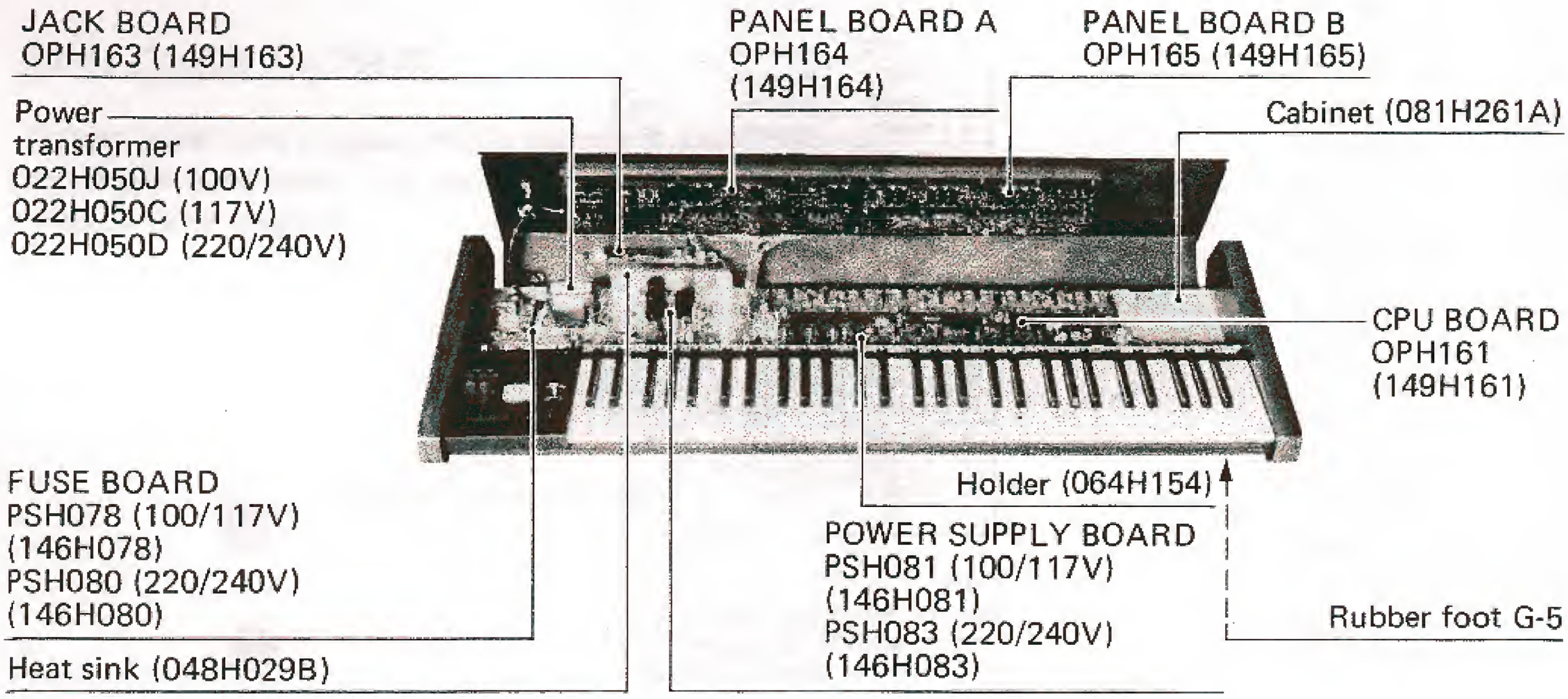
First Edition

SPECIFICATIONS

Keyboard: 61 Keys (5 octaves) C2-C7
VCF: Cutoff frequency (4Hz-40kHz)
ENV modulation (10 octaves max.)
LFO modulation (6 octaves max.)
Keyboard follow (0-100%)
ENV: Attack time (1ms–3s)
Decay time (2ms- 12s)
Sustain level (0-100%)
Release time (2ms-12s)
LFO: Rate (0.3Hz-20Hz)
Delay (0-2.5s)

Arpeggio: Rate (1.5Hz-50Hz)
Bender control range: DCO (±7 keys max.)
VCF (±4 octaves max.)
Output level: L(–30dBm)/M(–15dBm)/H(0dBm)
Output: (mono, stereo)
Tune: (±50cents)
Dimension: 1060(W) x 113(H) x 378(D) mm
Weight: 11kg
Power: 25W





PARTS LIST

KEYBOARD

004H008	SK-361C	(61 Keys)

CASE

081H261A	Cabinet
083H052	Side panel (right)
083H053	Side panel (left)
072H115B	Top panel
072H111C	Bender panel
064H154	Holder
	Rubber foot G-5

KNOB, BUTTON

22470128	Knob
016H004	Knob
016H029	Button (orange)
016H030	Button (yellow)
016H036	Button (white)
12479703	KT3-2 (Key top) (ivory)

POWER SWITCH

1314910	1801-0121

PUSH SWITCH

13129321	SUT11A-1
13129322	SUT11A-2
13129531	SUT32A-1
13129532	SUT32A-2

LEVER SWITCH

13139136	SLE-622-18P
13139135	SLE-623-18P

SLIDE SWITCH

13159316	HSW-0372-01-030

KEY SWITCH UNIT

13129717	KEH 10003 w/k ey top KT3-2
13129714	KEH 10903 switch proper
13129719	Guide pin CHC3 2801A
22269208	Cushion rubber CK42602A

PCB

149H161B	CPU board OPH 161B (etch mask 052H370B)
149H164A	PANEL board A OPH164A (etch mask 052H372A)
149H165A	PANEL board B OPH165A (etch mask 052H373A)
149H162A	BENDER board OPH162A (etch mask 052H371A)
149H163A	JACK board OPH163A (etch mask 052H374A)
146H081A	POWER SUPPLY board PSH081A (100/117V)
146H083A	POWER SUPPLY board PSH083A (220/240V) (etch mask 052H369A)
146H078A	FUSE board PSH078A (100/117V)
146H080A	FUSE board PSH080A (220/240V) (etch mask 052H348A)

JACK

13449211	HLJ-0259-01-030 (mono)
13449210	HLJ-0259-01-020 (stereo)

FUSE

12559331	GGS-0.8A prim. (100V/117V
12559511	CEE T500mA prim. (220/240
12559513	CEE T1.0A sec. (220/240V)

BENDER UNIT

029-022	PB-4

POSISTOR

15229909	ERS-B33G561	560Ω
15229910	ERS-B33G122	1.2KΩ

RESISTOR ARRAY

13829821	RGDS8 x 103K	10K x 8
13910113	RGDS4 x 103K	10K x 4
13910114	RGDS4 x 223K	22K x 4

POTENTIOMETER

Slider

13339416	EVA-TOHC14A14 10kA
13339409	EVA-TOHC14B14 10kB
13339410	EVA-TOHC14A54 50kA
13339419	EVA-TOHC14B54 50kB
13339411	EVA-TOHC14B15 100kB
13339418	EVA-TOHC14A16 1MA

Rotary

13219759	EWJ-EJAP20B14 10kB x 2
13219401	EVH-OTAS10B14 10kB

Trimmer

13299134	RVF8P01-502 5kB
13299135	RVF8P01-103 10kB
13299136	RVF8P01-503 50kB
13299137	RVF8P01-104 100kB
13299553	RVS0707V101-102M 1kB
13299554	RVS0707V101-502M 5kB

COIL

022A018	S167999	37μH

TRANSISTOR

15199113	2SA1015-GR
15119805	2SB834-O
15129114	2SC1815-GR
15129108OA	2SC945 (NZ-noise generator)
15129130	2SC1583-F
15129136	2SC2878-A or B
15129117	2SC1923
15129128	2SC752-Y

DIODE

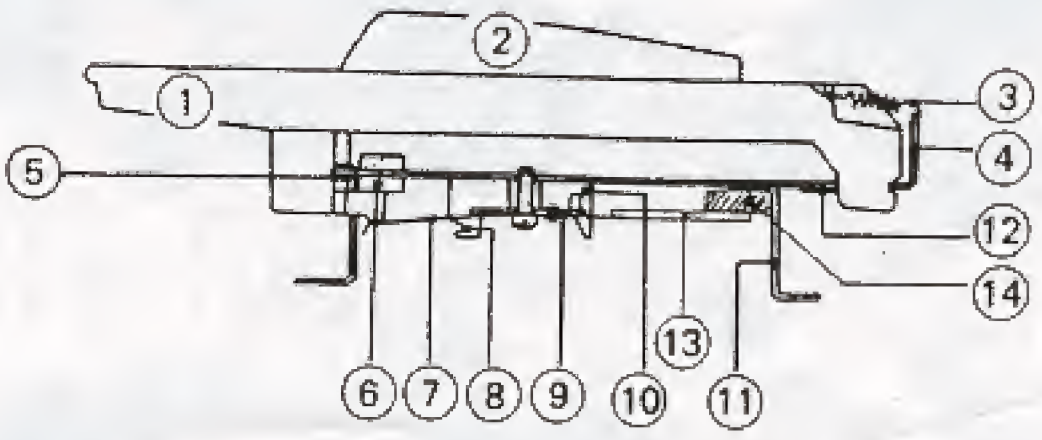
15019103	1S2473
15029103	TLR124 (LED)
15019249	KV1226X (Varicap)
15019245	1B4B41
15019243	1B4B1

POWER TRANSFORMER

022H050J	(100V)
022H050C	(117V)
022H050D	(220/240V)

IC		
15179135	μPD8049C-238	CPU
15159113HO	HD14051BP	Single 83CH Multiplexer
15159104HO	HD4011BP	Quadruple 2-Input NAND Gate
15159105HO	HD14013BP	Dual D-type Flip-Flop
15159112	TC4049BP	Hex Inverter/Buffer
15159116TO	TC4069UBP	Hex Inverter
15159120TO	TC4099BP	
15179110MO	μPD8253C	Triple Programmable Interval Timers
15229801	IR3109	VCF
15229807	IR3R01	ADSR
15229802	BA662 A or B	VCA
15169117HO	HD7407	Hex Buffers/Drivers
15169310HO	HD74LS42	BCO-TO-Decimal Decoder
15189118HO	TL082	OP Amp
15189142	TA75558S	OP Amp
15189143	TA75559S	OP Amp
15189105	μPC4558C	OP Amp
15189136BO	M5218L	OP Amp
020-215	MN3009	BBD
020-224	MN3101	BBD Driver
15199106TO	μPC7805	5V Voltage Regulator
15199110TO	TA7179P	±15V Voltage Regulator

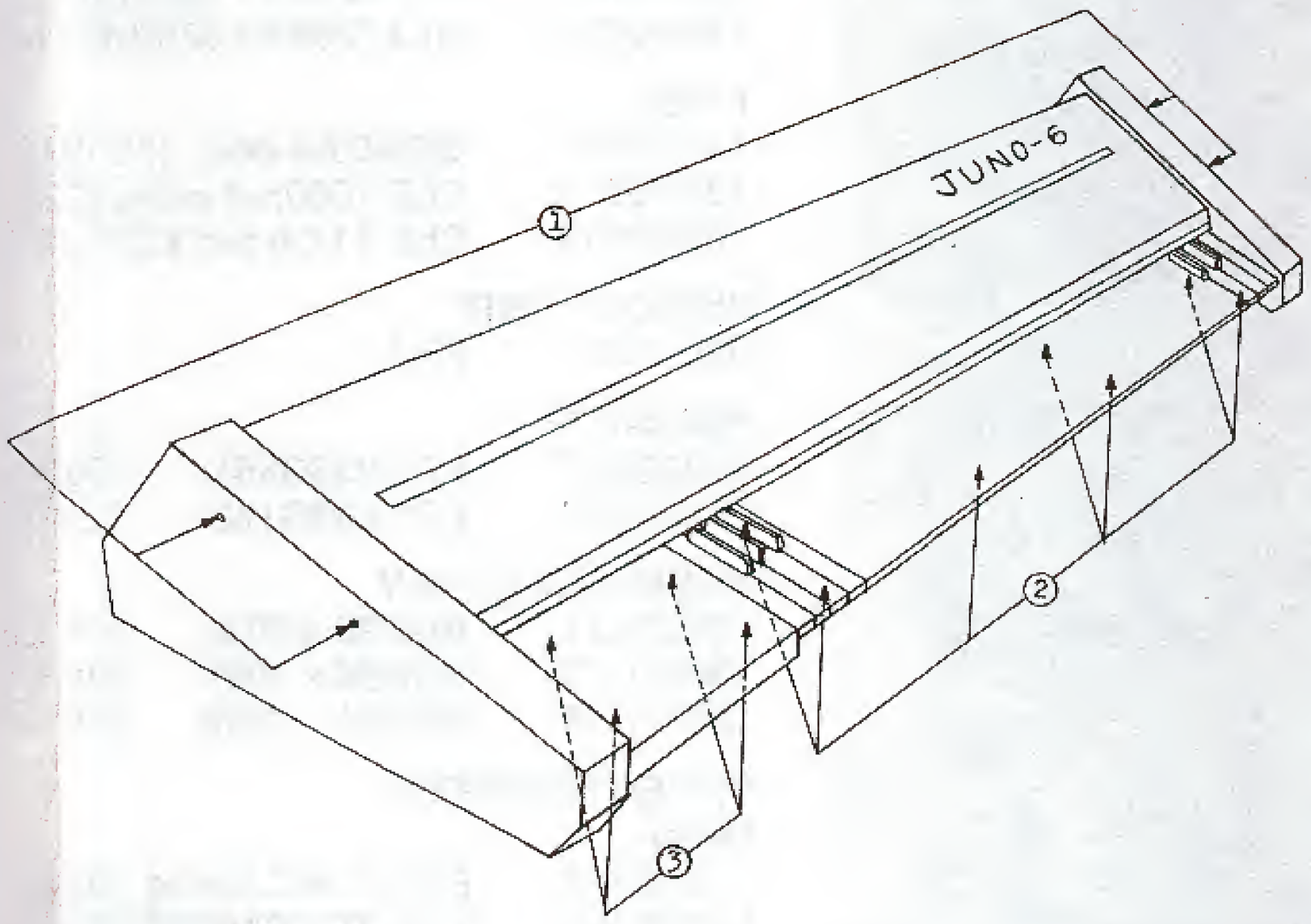
OTHERS		
048H029B	Heat sink	
12389804	Ceramic resonator	CSA11MHz with paired CSC300K
12199515	Fuse holder	TF-758



KEYBOARD PARTS
SK-361C (004H008)

NO	PART NO	DESCRIPTION	
1	106H026	Natural key	C F
1	106H027	Natural key	D
1	106H028	Natural key	E B
1	106H029	Natural key	G
1	106H030	Natural key	A
1	106H031	Natural key	C' F'
2	106H032	Sharp key	black
3	070H029	Key spring	H29
4	061H086A	Chassis	H86A
5	068H004	Guide bushing	H4
6	101H141	Level felt	H141
7	071H044	Contact leaf	H44
8	071H051	Busbar 8P	H51
	071H054	Busbar 5P	H54
9	043H007	Switch unit 12P	H7
	043H008	Switch unit 13P	H8
10	104H029	Busbar holder	H29
11	062H024	Chassis bracket	H24
12	098H006	Key stopper	H6
13	052H283-5	Matrix board	H283-5
14	107H059	Cushion	H59

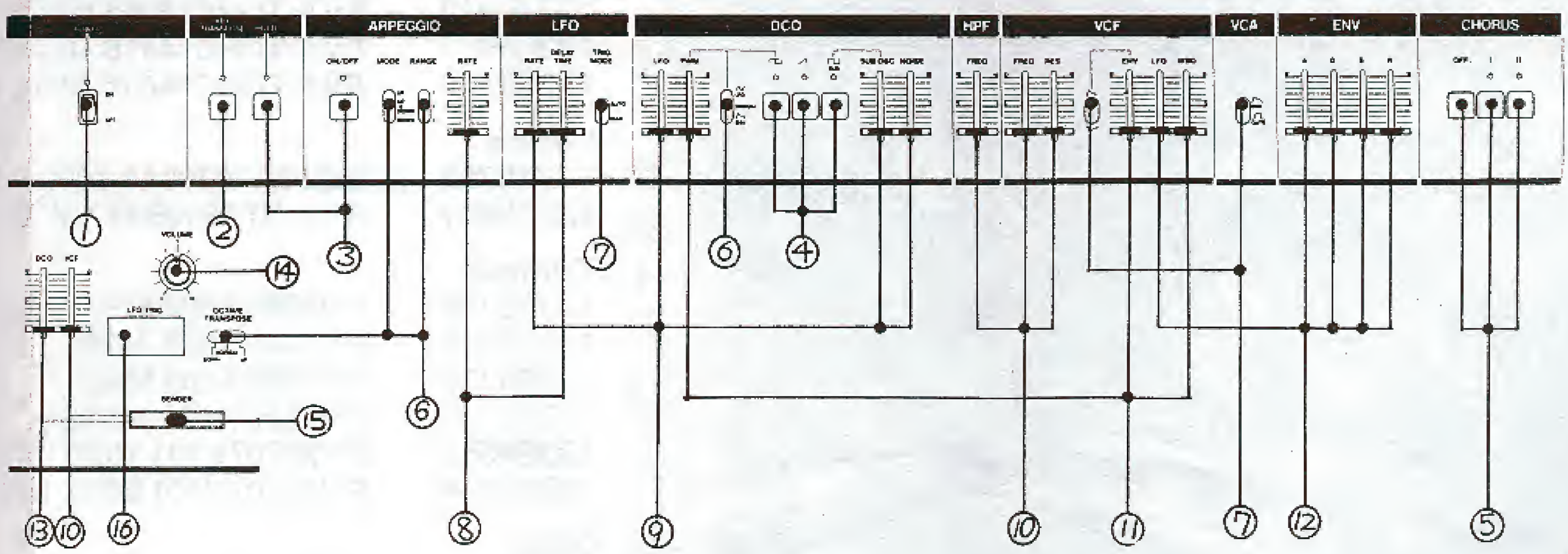
NOTE:
Although Roland has employed 8-10 digit coding, old ones (6 digit and 6 digit with H) are still applied to some parts.



①: Top panel removal screws
Joint 3 x 35mm (116H008)

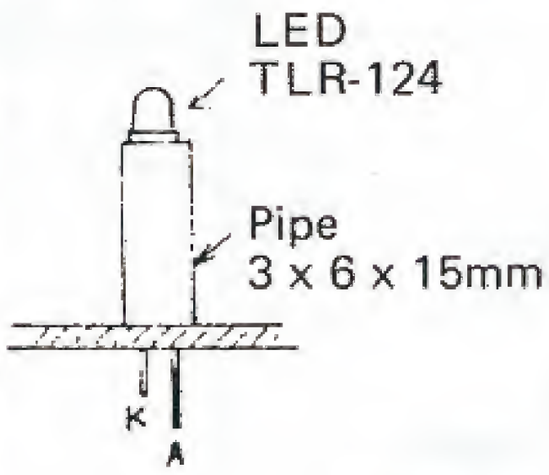
②: Keyboard removal screws
4 x 15mm truss Fe Br

③: Bender panel removal screws
TP 3 x 15mm pan Fe Br



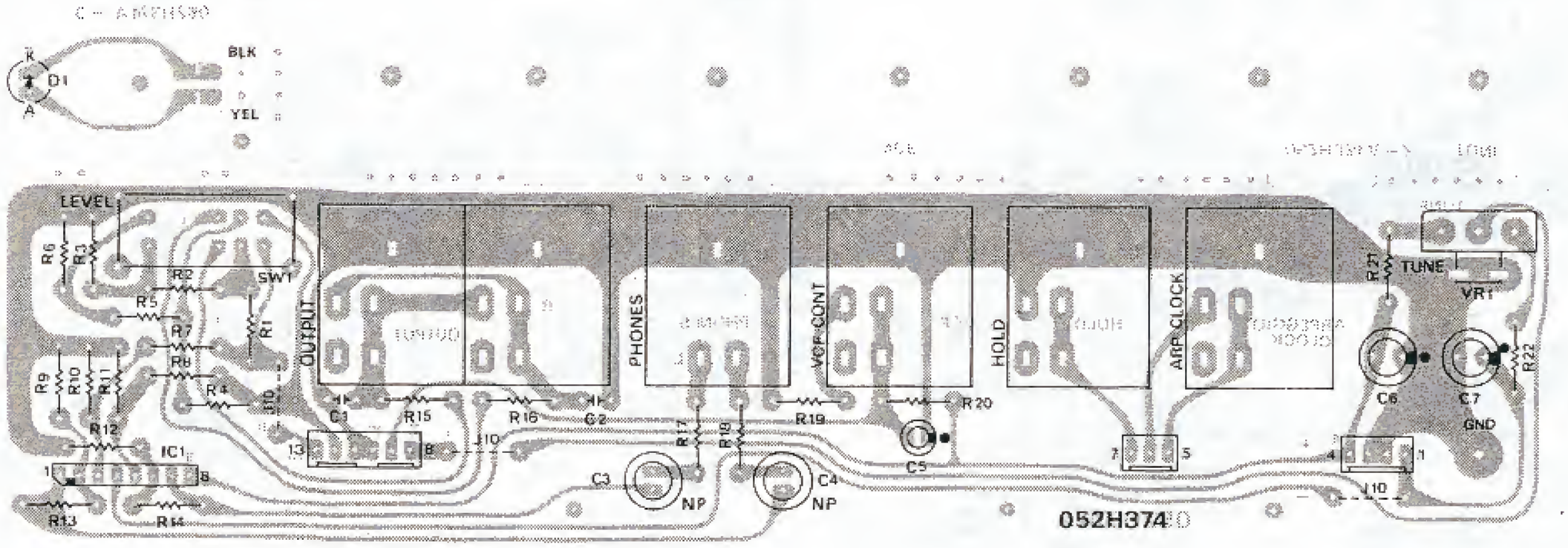
1	Switch	1801-0121 (13149102)	
2 3 4 5	Switch Switch Switch Switch	SUT11A-1 (13129321) SUT11A-2 (13129322) SUT32A-1 (13129531) SUT32A-2 (13129532)	Button orange (016H029) yellow (016H030) white (016H036)
6 7	Switch Switch	SLE-623-18P (13139135) SLE-622-18P (13139136)	
8 9 10 11 12 13	Pot. Pot. Pot. Pot. Pot. Pot.	EVA-TOHC14A16 1MA (13339418) EVA-TOHC14A54 50kA (13339410) EVA-TOHC14B54 50kB (13339419) EVA-TOHC14B14 10kB (13339409) EVA-TOHC14B15 100kB (13339411) EVA-TOHC14A14 10kA (13339416)	Knob (016H004)
14	Pot.	EWJ-EJAP20B14 10kB x 2 (13219759)	Knob (22470128)
15	Bender assy	PB-4 (029-022)	
16	Switch w/key top See parts list	KEH10003 (13129717)	
	All LEDs	TLR124 (15029103)	

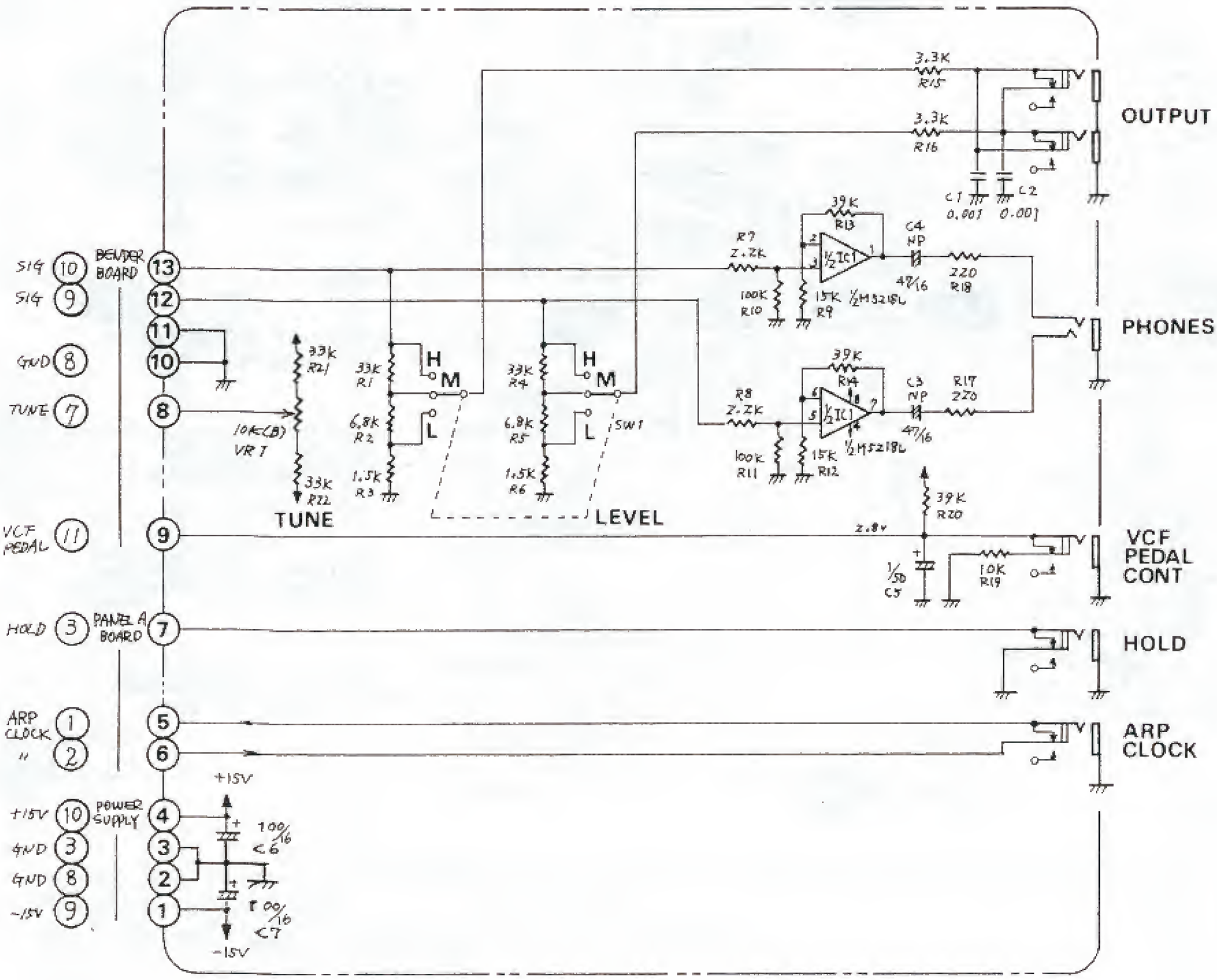
JACK BOARD OPH163A(149H163A)(pcb 052H374A)



SW1	HSW0372-01-030	JK-3	HLJ-0259-01-020
VR1	EVH-OTAS10B14	JK-1, 2, 4, 5, 6	HLJ-0259-01-030

SW1 **JK-1** **JK-2** **JK-3** **JK-4** **JK-5** **JK-6** **VR1**





ADJUSTMENT SAMMARY

Use OSCILLOSCOPE unless otherwise specified.
No particular channel, test point, trimmer, etc. are defined in the procedures common to sextuple circuits. Begin with channel 1 (CH1).

KEY ASSIGNMENT

Some adjustments need to be done in unique key assign mode available only in TEST MODE.

TEST MODE

To enter test mode hold KEY TRANSPOSE until power is ON.
Select key assign mode through ARPEGGIO MODE selector:

- UP (UNISON): six voices sounds simaltenously
- UP & DOWN (ROTARY): as the name implies, CPU assigns channels (in the order numbered, example, 1, 2, ... 6, 1) to the keys played (legato or staccato), and remembers the last channel even after the key is released.
  New assignment will start with the next channel. Note that the first key does not always activate CH1.
  The above applies to repeated striking on the same key.
- DOWN (NON-ROTARY): The key first played is always assigned CH1. Until the objective channel is assigned, the preceding key(s) can not be released.

To escape TEST MODE turn power OFF. Allow 3 sec for CPU reset circuit before turning on again.

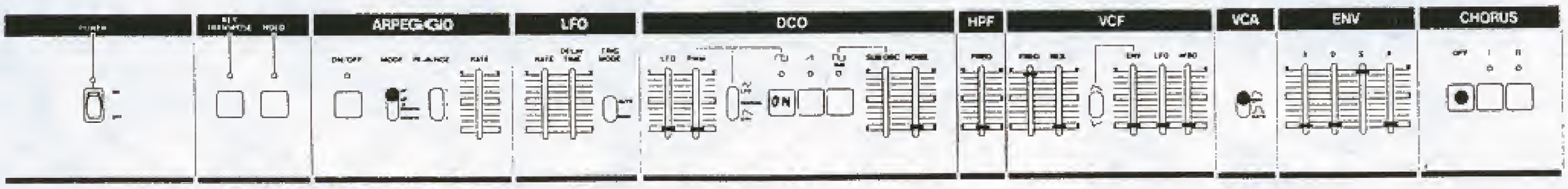
KEY DESIGNATION

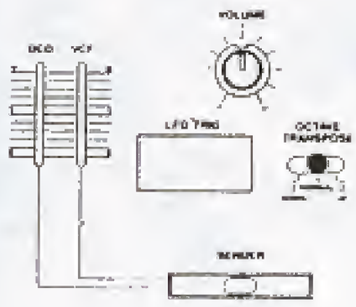
DC SUPPLY VOLTAGE (Power Supply Board)

- TEST POINTS: terminal 10 (+15V); terminal 8 (ground) (Connect to digital voltmeter, DVM.)

1. Adjust VR1 for +15±0.01V.
2. Verify voltage of −14.5 to −15.5V at terminal 9 (−15V).

MASTER OSCILLATOR (CPU Board)





- TEST MODE: UP (UNISON)
- CONTROLS: TUNE (rear panel) at midpoint

BIAS

- **TEST POINT:** TP-2 (VR39 wiper) (Connect to scope or DVM. Do not use low impedance meter.)

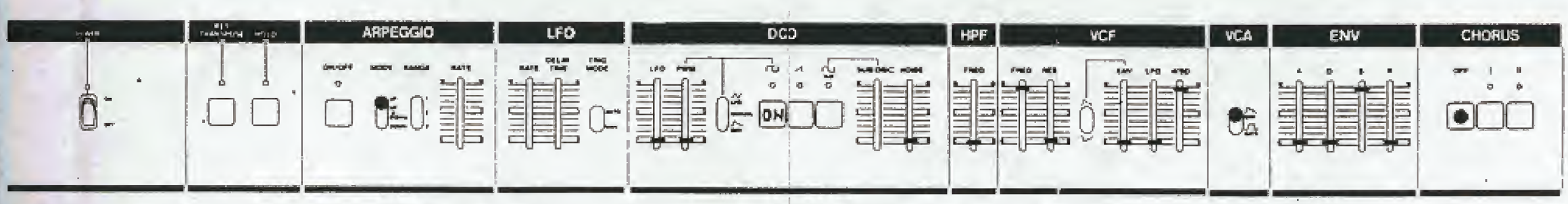
1. Adjust VR39 for 7.2±0.1V.

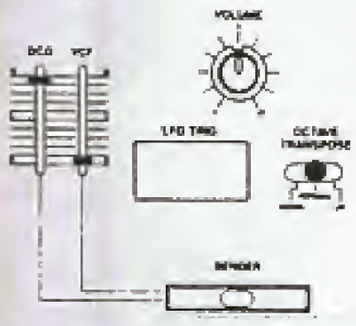
TUNING

- **TEST POINT:** TP-3, pin 10 of IC55 or OUTPUT jack

1. While holding down A4 key, adjust L1 for 442Hz. L1 is very tricky, so readjust VR39 for fine tune, as necessary. This has little effect on BIAS adjustment.

BENDER CONTROL (BENDER Board)





- **TEST MODE:** UP
- **TEST POINT:** same as for TUNING, above

1. Use HOLD function. With E5 note on, tilt and hold BENDER lever at the leftmost position and adjust VR1 so that the frequency is 442Hz (A4 note).
2. HOLD D4 key. With BENDER at the rightmost, adjust VR2 so that frequency is 442Hz.

SAWTHOOTH WIDTH & LEVEL (CPU Board)

- **CONTROLS:** OCTAVE TRANSPOSE at NORMAL
- **TEST POINT:** TP-3
- **TEST MODE:** UP

1. Set VR37 and VR38 at midpoint.
2. Striking C2 and C7 keys alternately (with break between notes), adjust WIDTH VR37 for the same amplitude on both keys.
3. While holding C4 key down, adjust LEVEL VR38 for 12Vp-p. Next, check TP-3 of the remaining channels (2-6) for 12±0.5Vp-p.

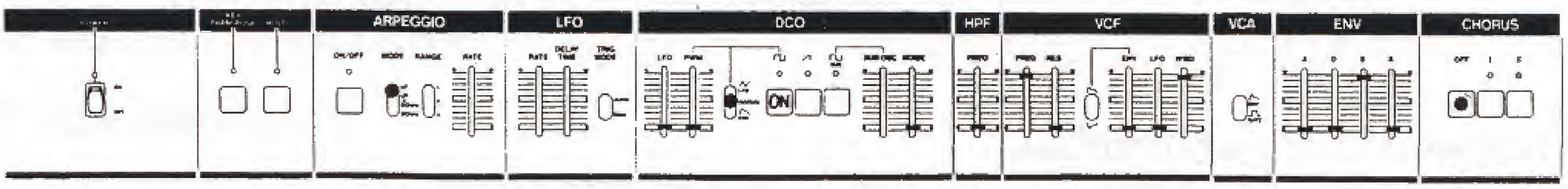
PULSE WIDTH (CPU Board, PANEL BOARD A)

- **CONTROLS:** DCO section – WAVEFORM-PWM; MODE-MANUAL; PWM slider-0
- **TEST POINT:** pin 1 (CH1) of TP-4 (CPU board) (scope – 1V/div, 0.2ms/div)
- **TEST MODE:** UP

1. While holding down B4 key, adjust VR9 of PANEL BRD A for a 496Hz rectangular of duty cycle 50. Check all other channels (pins 2-6) for 48-52 duty cycle.
2. Set PWM slider to 10 and check every pin of TP-4 for 95 to 98% duty cycle.

VCA (CPU Board)

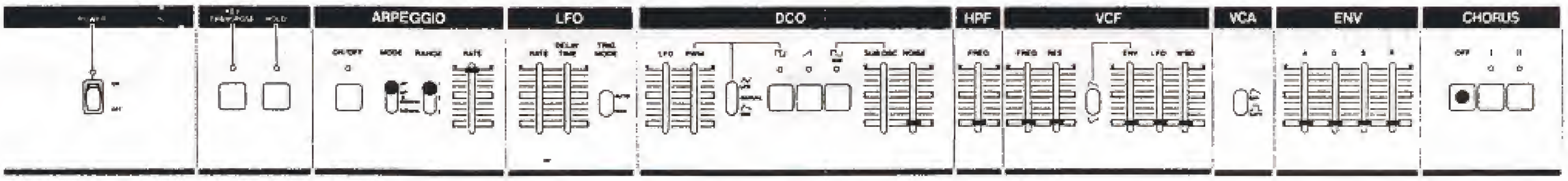
GAIN



- TEST POINT: TP-4 (pins 1-6)
- TEST MODE: UP

1. Depressing C5 key, adjust VCA GAIN VR4 for 4Vp-p.

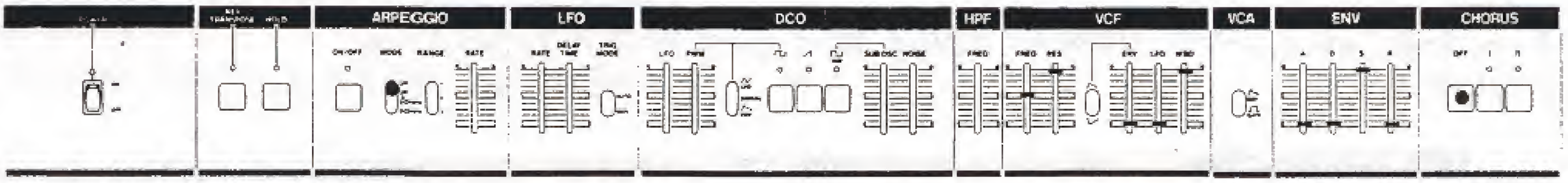
OFFSET

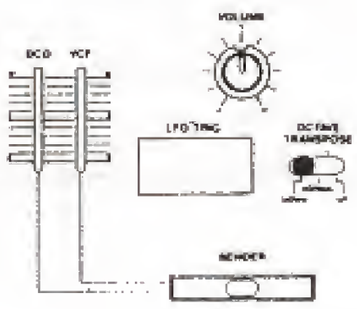


- TEST POINT: TP-4 (pins 1-6) (scope 0.2V/div)
- TEST MODE: Normal (Push ARPEGGIO. This overrides Test Key Assign Mode until pushed again.)

1. HOLD ON more than one note, 6 channels will be gated in sequence.
2. Adjust OFFSET VR5 for reasonable straightness.

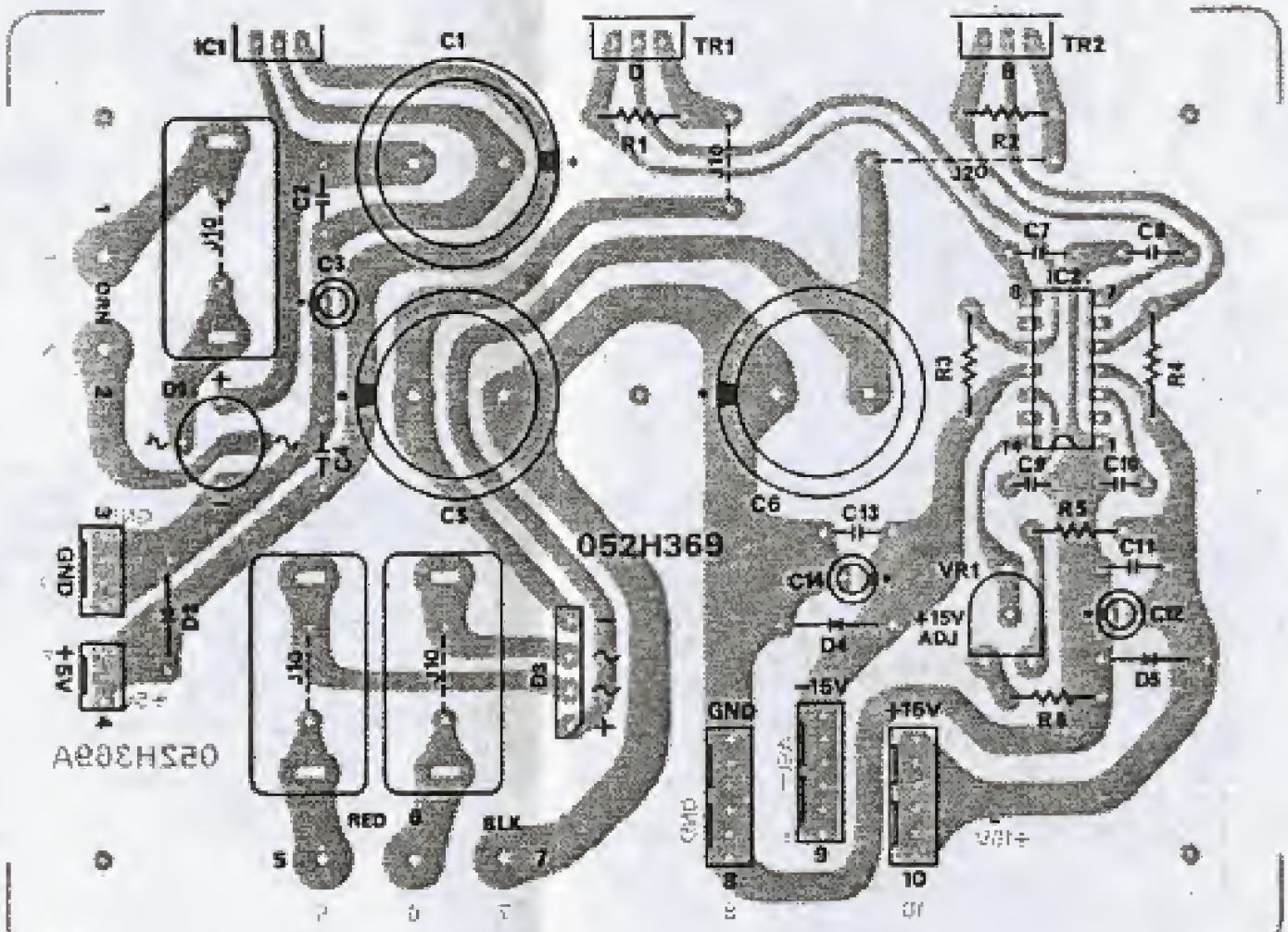
VCF (CPU Board)

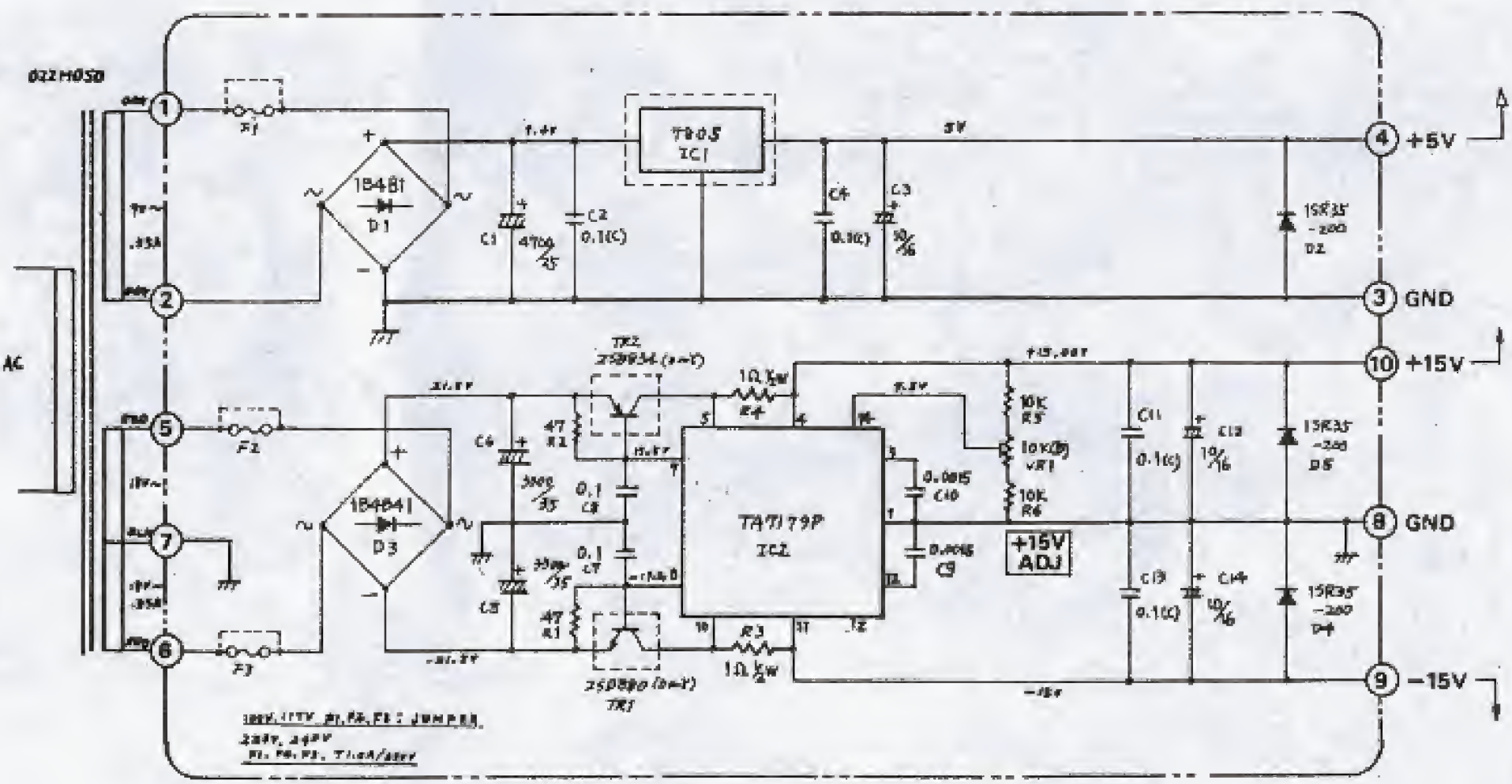




- TEST POINT: TP-4 (pins 1-6)
- TEST MODE: UP

POWER SUPPLY BOARD
PSH081A (146H081A) 100/117V (less fuses)
PSH083A (146H083A) 220/240V
(pcb 052H0369A)





MAY.10,1982

DCO

WAVEFORM

VR37 WIDTH

VR38 LEVEL

TP3

KCV DMPX

VR1 RES 10K VR1

PWM DMPX

VCF CV DMPX

TP2

VR39

KEYBOARD 5K 36IC

IC56 μPD8049C -238

NOTES: UNLESS OTHERWISE SPECIFIED
1) ALL NPN TRANSISTORS ARE 2SC1815 (GR or Y)
2) ALL PNP TRANSISTORS ARE 2SA1015 (GR or Y)

VCF

VR4

VCA

TP4

IR3109 IC17.14.11.8.5.2

GAIN VR4 20K

BA662 IC24.25.21.22.19.20

TP4

TP5

C112 47P

R369 3.3K

TA75559S IC23

CH1 CH2 CH3 CH4 CH5 CH6

TP8

R390 3.3K

R391 10K

47/16 5V x4

0.01 x3

0.1C x6

+15.0V

47/16 x4

0.1C x4

0.1C x4

47/16 -15V x4

PANEL A BOARD 41 NOISE

PANEL B BOARD 32 SIG OUT

POWER SUPPLY 60 4

" 59 4

POWER SUPPLY 58 3

POWER SUPPLY 61 10

" 62 8

PANEL " 35 1

NC 33

POWER SUPPLY 63 9

PANEL B BOARD 31 7 VCA ENV

R38 56K

GAIN VR4 20K

C8 1/50 NP

R41 4.7K

R40 470

R39 470

R42 47K

R50 27K

100K VR5 OFFSET

VR5

TR6

R42 680K

Sec Left Page

TR7

R47 5.6K

R48 120K

R43 10K

R45 12K

C9 0.22/50 MS

R46 68K

R44 27K

TR8

R49 68K

TR55

R368 68K

R367 27K

R1 RES 10K VR1

BA662 IC18.13.12.7.6.1

R4 15K

R2 1.5K

R1 1.5K

TR1

R5 47K

R3 100K

R13 680K

100K VR2

FREQ

VR3

WIDTH

5K VR3

R20 12K

R19 560

.+8V/oct

R21 3.3K

C5 NP 10/16

R14 10K

R6 560

R7 68K

C1 240PS

R8 68K

R9 560

C2 240PS

R10 68K

R11 68K

R18 560

C4 240PS

R17 68K

R16 68K

R15 560

C3 240PS

R12 68K

+3V — -11V

½TL082 ½IC46

½IC46

IC44

IC42

VCF CV DMPX

TP6

R373 1M

R61 10K

CH1

IC32 4051B

COM INH VEE A B C

CH2 CH3 CH4 CH5 CH6

R374 47K

2.7K R372

RA-2 10Kx4

ENV

IR3R01

REF COM OUT GATE S R D A

C11 0.047

R55 27K

R56 15K

TR9

R57 68K

C10 0.0033

IC30,31,28, 29,26,27

R60 12M Attack Time 35sec ADJ.

R58 1.2K

R59 470K

100K VR6

ENV TIME

R54 22KMF

R53 22KMF

R52 22KMF

R51 4.7K

TP7

½IC38

½TL-082

PANEL B BOARD 26 12 REFERENCE +7.5V

PANEL B BOARD 28 10 SUSTAIN

" B 27 11 RELEASE

" B 29 9 DECAY

" B 30 8 ATTACK

PANEL B BOARD 24 3 MULTI KCV

PANEL B BOARD 34 5 RES CV

PANEL A 43 29 SUB

" A 44 28

" A 42 30

" A 45 27 MULTI PWM CV

PANEL B 25 2 MULTI VCF CV

PANEL A BOARD 40 32 MULTI ADSR

PANEL B BOARD 23 4 MULTI ADSR

C86 0.01C

C85 0.1C

GATE

IC50 4099

IC52 IC53 4049

IC48 IC49 4011

KCV

IC51 TL082

150K HF x7

150K HF x6

R431 R432 R433 R434 R435 R436 R437

R421 R422 R423 R424 R425 R426

R427 150K HF

R428 47K

R429 150K HF

R430 0.01(C)

C128

R439 47K

R440 47K

R443 47K

CH1 TP7 CH2 CH3 CH4 CH5 CH6 -48V/oct

PANEL A BOARD 39 4 KEY TRANSPOSE

" A 38 5 TOTAL GATE

" A 37 6 T1

" A 36 7 T0

TR62

R420 560

MHz 1.902

R419 15K

R449 2.2K

TR63

R439 47K

IC55 8253

DATA WR CS A RD

DB

IC54 8253

P2

X1 CSA 11MHz

C131

CSC 30PF X2

10Kx8 RA-3

T0 T1

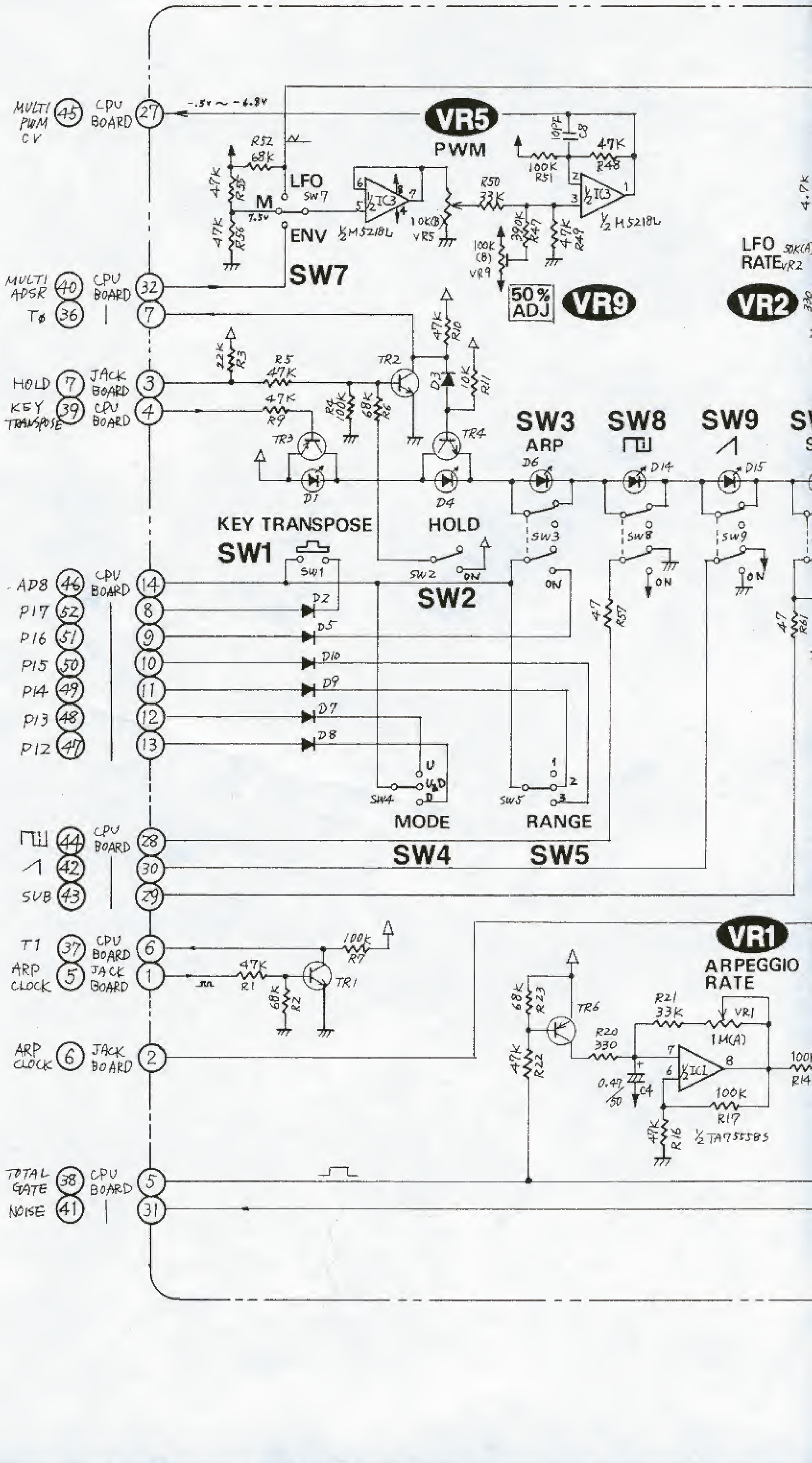
3). ALL DIODES ARE 1S2493

MAY.10,1982

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

SW1:
SUT11A-1
SW2, 3:
SUT11A-2
(push-lock)
SW4, 5, 7:
SLE623-18P
SW6:
SLE622-18P
SW8-10:
SUT32A-1
(gang)
Button:
white H36
orange H29
yellow H30

VR1, 3:
EVA-TOHC14A16
VR2, 4, 6, 7:
EVA-TOHC14A54
VR5:
EVA-TOHC14B14



18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

CP1

½TA75558S

R19 47K

R53 47K

47K R54

½TA75558S

4.7K R24

33K R18

23K R25

0.1 C6

LFO RATE VR2 50K(A)

150K R32

330 R25

150K R28

½TA75558S

VR2

R27 47K

R30 3.3K

D13 D12

220 R31

R34 100K

100K R35

2SC1583

TR10

220 R29

100K R33

100K R26

1M R36

100K(B) VR8

LFO OFFSET

VR8

50K(A) VR4

LFO VR4

20 PANEL B BOARD 15 −15V

21 −15V 14 GND

+15V 22 13 +15V

23 16 LFO ~

24 BENDER BOARD 20 LFO ~

TR8 TR9 TR7

R38 1K

R39 4.7K

1M(A) VR3

DELAY TIME

VR3

100K R37

1/50 C7

22K R40

R42 10K

2.2K R41

47K R43

SW8 SW9 SW10 SUB

D14 D15 D16

TR17

R60 27K

27K R59

680 R58

SW8 SW9 SW10

ON

C13

R63 68K

1.5K R64

47 R61

22K R62

50K(A) VR6

TR16

SUB VR6

SW6 MAN AUTO

TRIG MODE

SW6

TR11

2.2/50 C6

10K R46

100 R43 D17

47K R44

26 BENDER BOARD 18 LFO TRIG

R68 1M

C11 1/50

MS

TR13

4.7K R67

4.7K R66

IC4 BA662

C9 47PF

220K R65

0.01 C10

R70 100K

82K R72

R74 220K

R73 10K

TR15

TR14

1/50 C12

2SC945 NOISE SELECTED

10K R69

+5V

270 R8

35 YEL

33 BLK

POWER INDICATOR

C15 10/16

C14 10/16

TR12

50K(A) VR7

3.3K R71

VR7

NOISE

15 POWER SUPPLY 4 +5V

16 3 GND

47/16 C1

+15V

17 10 +15V

C2

18 8 GND

C3

19 9 −15V

47/16 K2

−15V

VR1

ARPEGGIO RATE

R21 33K

VR1 1M(A)

C4

7 6 ½IC1 8

100K R14

100K R17

47K R16

½TA75558S

R13 22K

10K R12

TR5

10K R15

D11

NOTES : UNLESS OTHEWISE SPECIFIED

1). ALL NPN TRANSISTORS ARE 2SC1815 (GR or Y)

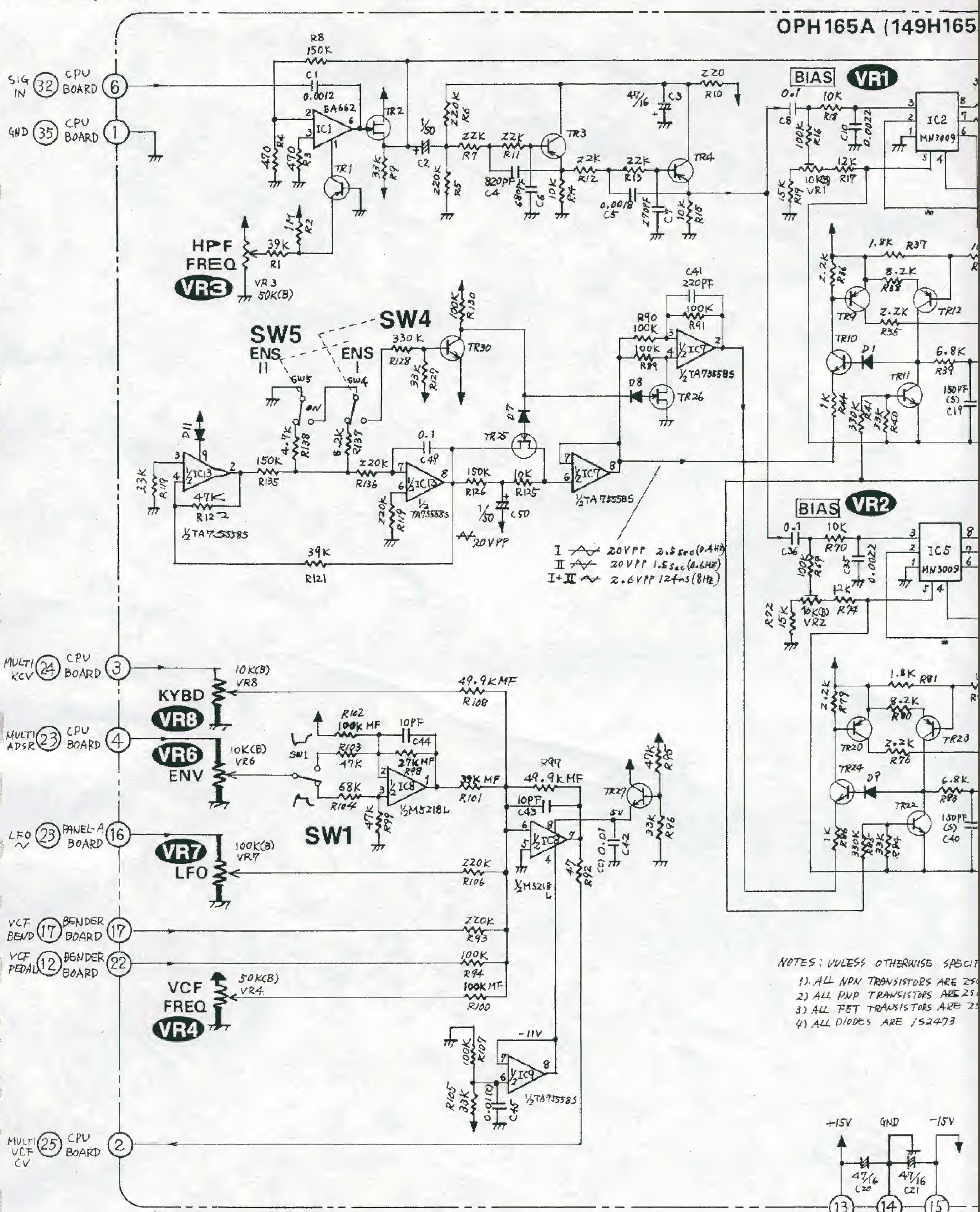
2). ALL PNP TRANSISTORS ARE 2SA1015 (GR or Y)

3). ALL DIODES ARE 1S2473

4). ALL LED ARE TLR124

MAY.10,1982

OPH165A (149H165



Changes in components SN 181650–

R98, 100, 101, 102 – carbon to metal film (CRB25FX)

R103 – 8K to 47K

R104 – 47K to 68K

65A (149H165A)

VR1 IC2 MN3009 3.3KX2 R24 R23 47K R21 0.0022 C11 22K R25 22K R26 820PF C13 680PF C12 TR5 220 R22 47/16 C9 CP1 22K R28 22K R29 TR6 0.0018 C17 270PF C18 10K R30 1/50 HS C16 22K R31 TR8 D2 R51 47K 100K R50 39K R46 TR13 10K R43 47/16 C22 10/16 C23 10K R45 1/2 TA75S585 10/16 NP C25 1.5K R35 TR16 2SC2878 10/35 C27 47K R54 D3 D4 470K R56 4.7K R57 D5 10K R58 4.7/25 C26 TR15 19 BENDER BOARD 15 SIG OUT

1.8K R37 10K R42 8.2K R38 TR9 2.2K R35 TR12 D1 TR10 6.8K R39 TR7 TR11 150PF (5) C19 330K R41 33K R40 2.2K R34 22K R33 1.8K R32 IC3 MN3101 10/16 C15 10/16 C14 10 R20 2.2/50 C39 SW4 ENS I SW5 ENS II 10K R131 100K R133 TR31 1.8K R132 D12 TLR124 TR32 D13 TLR124 100K R134 100K R120 150K R129 560K R123 TR29 10K R27 330K R28 D10 1/50 C51 39K R124

VR2 IC5 MN3009 3.3KX2 R65 R66 47K R64 0.0022 C32 22K R67 22K R68 820PF C34 680PF C33 TR19 220 R62 47/16 C30 22K R63 22K R61 TR18 0.0018 C29 270PF C31 10K R60 1/50 HS C28 22K R59 TR17 D6 R52 47K 39K R53 100K R47 1/2 TA75S585 10/16 UP C24 47K R49 1.5K R48 TR14 2SC2878 18 BENDER BOARD 16 SIG OUT 20 BENDER BOARD 14 GND

1.8K R81 10K R82 8.2K R80 TR20 TR23 2.2K R76 TR24 D9 6.8K R83 TR21 TR22 150PF (5) C40 330K R85 33K R84 2.2K R78 22K R77 1.8K R73 IC6 MN3101 10/16 C38 10/16 C37 10 R75

SW2 SW2 2.2K R114 +7.5V 1/2 TA75S585 47K R112 47K R113 0.01 (C) C48 100K(B) VR11 1/2 IC11 1/2 TA75S585 7 CPU BOARD 31 VCA ENV 12 CPU BOAD 26 REFERENCE VOLTAGE 10 CPU BOARD 28 SUSTAIN VOLTAGE

VR9 A VR10 D VR12 R S VR11 VR9 100K(B) 3.3K R117 39K R116 VR10 100K(B) 39K R115 VR12 100K(B) 39K R118 1/2 IC1 1/2 TA75S585 1/2 IC2 1/2 TA75S585 1/2 IC3 1/2 TA75S585 1/2 IC10 1/2 TA75S585 11 CPU BOARD 27 RELEASE VOLTAGE 9 CPU BOARD 29 DECAY VOLTAGE 8 CPU BOARD 30 ATTACK VOLTAGE 5 CPU BOARD 34 RESONANCE CV

22K R111 TR28 47/16 C47 100K R110 1/2 IC9 1/2 TA75S585 +5V R109 51K 0.47/50 C46 VR5 50K(B) RES VR5

UNLESS OTHERWISE SPECIFIED
NPN TRANSISTORS ARE 2SC1815 (GR or Y)
PNP TRANSISTORS ARE 2SA1015 (GR or Y)
FET TRANSISTORS ARE 2SK30A (GR or Y)
DIODES ARE 1S2473

+5V GND -15V 47/16 C20 47/16 C21 13 PANEL-A BOARD 2 +5V 14 PANEL-A BOARD 21 GND 15 PANEL-A BOARD 20 -15V